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I. GENERAL INFORMATION

FIXING OUTPUT QUOTAS FOR FARM HOUSEHOLDS DISCUSSED

Beijing RENMIN RIBAO in Chinese 5 Nov 80 p 2

[Article by Wu Xiang [0702 6272]: "The Open Road and the Log Bridge: Origins, Advantages and Disadvantages, Nature, and Future of Fixing Farm Output Quotas for Each Household"]

[Text] Editor's Note: Recently, in some provinces, municipalities, and autonomous regions, the question of whether farm output quotas should be fixed for each household (including job responsibility for each household) became the subject of widespread discussion among cadres and the masses. The central authorities have already made policy stipulations to benefit work and production.

This essay comments on fixing farm output quotas for each household. In considering actual conditions, it expounds and inquires into the origins, advantages and disadvantages, nature, and future of fixing farm output quotas for each household, and it can serve as a reference. It is hoped that readers with different views will discuss the subject further.

"You take your open road; I'll take my log bridge." Surely it would be undesirable for one to disregard the open road and insist on taking the log bridge. If conditions are not as stated, then the person who says this must have a certain practical and realistic spirit, because he does not blindly follow other people but dares to proceed from local conditions to find his own road. With this introductory remark, let us discuss the origins, advantages and disadvantages, nature, and future of fixing farm output quotas for each household.

I. Origins

The collective economy is the unshakable and basic economic form of our country's agriculture in its advance toward modernization. After over 20 years of striving, our country's farm collective economy in most places has already consolidated or become more consolidated, and conditions for production have made an initial improvement. At present, in the entire country there are 700 million mu of irrigated area, over 600,000 large and medium-size tractors, a total of 180 million horsepower of various types of agricultural machinery, over 80 billion yuan in the public wealth of commune production brigades, and the total output value of enterprises of commune teams is a third of the total output value of agriculture. As a

whole, a significant development has been made in agricultural production. The entire national population has almost doubled, while the people's living has basically stabilized. Such an achievement should not be underrated. Give the actual conditions in our country, it is not possible to imagine the establishment of modernized agriculture and the realization of a relatively high productive labor and commodity rate on the basis of a small agricultural economy.

However, we also need to recognize that some serious problems exist in our country's collectivization, that is, the cooperative movement, which has experienced both success and some twists and turns.

During the period of mutual aid teams and elementary agricultural producers' cooperatives, the growth of the movement was healthy, due to the emphasis on the principles of voluntary participation and mutual benefit and on the method of setting examples by model. In 1955 the number of semisocialist, elementary agricultural producers' cooperatives in the whole country grew to 670,000 with successive years of increase in agricultural production. Unfortunately, the pace of organizing cooperatives following its high tide in the winter of 1955 was too fast; quite a few places committed the mistake of being too greedy and of resorting to coercion and commandism in varying degrees. At the end of 1955, only 4 percent of the agricultural households were participating in advanced agricultural producers' cooperatives, but by the end of 1956 this had sharply increased to 87.8 percent. In less than 1.5 years, the original plan for the arduous task that would take "10 to 15 years or a little longer" to complete was accomplished. From mutual aid teams, and even under conditions of individual farming, a large number of peasants attained the highest level in one step by directly entering advanced agricultural producers' cooperatives.

Looking back now, we see that the conditions for comprehensively organizing cooperatives at that time had not matured and were not adaptive to the peasants' level of consciousness and the cadres' management standards, and particularly to the level of development of productive forces. Therefore, agitation for "pulling out the cow and withdrawing from the cooperative" appeared in quite a few places in 1957. At that time, emphasis was not placed on proceeding from the standards of development of productive forces and on developing only after carrying out the necessary reorganization and consolidation of the cooperatives. Instead, emphasis was placed on the antiright and on the use of the so-called "great debate of the two roads" to attack the so-called "individual farming style." This sowed the seeds for a subsequent greater mistake "communist style," "proneness to boasting and exaggeration" and "blind commandism," in the 1958 communization movement. The scope of production teams increasingly expanded, and the standards for transfer to public ownership increasingly heightened. It was not until 1961, after the eight-character policy to "readjust, consolidate, substantiate, and improve" was put forth, that small accounting units were reduced in scope, exchange at equal value was emphasized, and "three-level ownership by the commune, the production brigade, and the production team, with the production team as the basic accounting unit," was explicitly stipulated. But in the "four cleanups" movement in 1964, the series of agricultural policies determined by the eight-character policy were regarded as being "rightist" and a "revival of capitalism," and were criticized from top to bottom, creating serious evil consequences.

In that 10-year period of disorder, conditions deviating from productive forces and the mistake of continuously altering productive relations were pushed to the extreme

by Lin Biao and the "gang of four," generally developing its evil nature into pseudosocialism for the poor. This seriously damaged the socialist initiative of the broad masses of peasants to the extent that agricultural production became stagnant for a long period of time and suffered heartbreaking destruction. According to the statistics of 1976 and 1977, the production level of 200 or so counties in the whole country was close to that of the early period of liberation, and in a minority of these it was even lower. This summer, according to the statistics of 5.04 million agricultural village accounting units (a little less than the total), 25 percent had an average individual income above 100 yuan, 27.3 percent were under 50 yuan, and the remaining 50 percent or so ranged between 50 and 100 yuan. The poorest of some of the very poor production teams could not even solve the problems of clothing and food. They could hardly maintain simple reproduction and frequently existed through "reliance on resold grain for food, reliance on loans for production, and reliance on relief for a living." When the collective economy does not run well, the masses lose their initiative, and when the masses lose their initiative, the collective economy does not run well--thus forming a vicious cycle. Struggling in this vicious cycle, the agricultural population has reached approximately 100 million. This is the reality we must directly face.

The causes of this situation are many, but mainly it is due to interference and destruction by the leftist trend of thought and the ultraleftist line. The two most prominent lines are, first: subjectivism in labor management and production command--enlivening "the great call to prosperity" with no right of free choice, fighting wars of attrition and fatigue, and consuming more time with less efficiency. The other one is egalitarianism in distribution--eating out of "the big pot," more work but not more pay, less work but not necessarily less pay, and some who do not work might get more. These two problems are universal and are more serious among those commune teams which have long been backward and impoverished. The peasants of China, who have suffered deeply under the weight of the oppression and ruthless exploitation of the three big mountains of imperialism, feudalism, and bureaucrat-capitalism, are the most reliable allies of the proletariat. Under the leadership of the Communist Party, they have been liberated, have been given land, and have willingly followed the Communist Party along the road of socialism. Even though the collective economy has lost its attractiveness among those commune teams which have long been backward and impoverished, the peasants still have not abandoned the socialist road but spontaneously are striving to find a way to escape the vicious cycle within the permissible bounds of socialism. This is the beginning of fixing farm output quotas for each household.

Earlier in the 3 difficult years, places in many provinces and prefectures of the country had fixed farm output quotas for each household. Anhui promoted "responsibility fields" within the province, which actually meant fixing farm output quotas for each household. Despite subsequent and repeatedly severe criticism, this was either overtly or covertly continued without interruption in certain places. Since the Third Plenary Session of the Eleventh Party Central Committee, the central authorities have emphasized emancipating thinking, relaxing policies, and enlivening the economy, and have defined job responsibility systems to link up with output. In this situation, some production teams that had covertly fixed farm output quotas for each household came into the open and speedily grew in impoverished and backward areas. Fixed farm output quotas for each household appeared time and again; this actually reflected opposition by some of the peasants to leftist policies and lines. Some comrades blamed this on "superficial propaganda" or "promotion by the leadership." Clearly, they have not grasped the key to the problems. Of course,

it is undeniable that the leadership is an important factor, as its support or opposition would make the situation drastically different. However, since fixing farm output quotas for each household has become a demand by the masses, it will be necessary to objectively analyze economic conditions. Is fixing farm output quotas for each household a log bridge? Can it be crossed, and should we cross it? These have become problems that must be studied in earnest.

II. Advantages and Disadvantages

Why do the peasants of some prefectures strongly demand the fixing of farm output quotas for each household? Simply because it suits the masses in those prefectures for increasing production and improving the necessities of life.

Inspired by the spirit of the Third Plenary Session of the 11th Party Central Committee, over the past 2 years the cadres and masses of commune members in rural areas throughout the country have proceeded from actual conditions, emancipated their thinking, daringly studied, and established diversified forms of job responsibility systems in production. There are two overall categories: one is the short-term job contract with payment according to quotas; the other is the job contract with full responsibility for output quotas, with payment based on related output. Various forms of job responsibility systems play a role in correcting subjectivism and egalitarianism and can therefore bring into play the initiative of commune members. A system of responsibility that is related to output can do this better than one that is not. Moreover, among commune teams that have long been backward and impoverished, fixing farm output quotas for each household or job has more striking results than that for a group. In general, the concrete practice of fixing farm output quotas for each household or job are the "three contracts": contract for a job, production contract to fulfill output quotas, and contract for expenses; and the "three unifications": the production teams have unified planning, unified accounting, and unified distribution. Two parties sign a contract; those who overfulfill the output quotas will be paid, while those who underfulfill them will be penalized. This method plays a particularly prominent role in changing the face of teams that are backward and impoverished. This has been fully proven not only in certain communes and production teams but also within counties. For example--Feixi County in Anhui; Lankao County in Honan; Dongming County in Shandong; Longxi, Tongwei, and Huining counties in Gansu--all have begun to change their appearance because of fixed farm output quotas for each household or similar types of methods which, together with forceful measures to increase production, have ended the long history of eating resold grain.

This June and July, the State Agricultural Committee organized teams of theoreticians and pragmatists from concerned departments to conduct investigations in over 10 provinces. Despite the divergence of views on the advantages and disadvantages, the economic result of fixing farm output quotas for each household is commonly recognized to be the most prominent among commune teams that have long been backward and impoverished, because their situation can be speedily transformed. From the great amount of investigative materials, the system of job responsibility related to output, particularly the fixing of farm output quotas for individual households, can give better play to the initiative of commune members because of the following advantages:

(1) It can effectively implement the principle of distribution according to work and can assure the material benefits of commune members. Not only can the production part of the contract distribute a reasonable share, but any overfulfilled output belongs to [the members] themselves. The more they work, the higher the payment. Commune members are therefore willing to give fullest play to their potential labor capacity.

(2) It can effectively resist arbitrary and impractical directions and truly realize the democratic operation of the commune. In the past, when the great call for prosperity was enlivened, cadres often were responsible only for the state plan and for the tasks assigned by the higher level. Control was too broad, meticulous, and stifling. It suppressed the zeal and initiative of the commune members. Now that they have taken over economic responsibility for their products and their output, they are justified in resisting arbitrary and impractical directions, and they have the right to use the lowest cost (cost, including physical labor) to obtain the best results and to assure growth in production and income.

(3) It can effectively resist egalitarianism, the indiscriminate transfer of resources, and the taking of more than one's share. These practices had increased the heavy burden borne by the peasants and had greatly dampened their immense enthusiasm for work. In carrying out a system of job responsibility in production, there is no way to equalize and transfer the overfulfilled portion of the output. Commune members know what they are doing with their production contract. With the exception of state-stipulated purchase quotas and that which should be put aside for the collective, it would not be easy to once again practice egalitarianism and indiscriminate transfer of resources. As their labor is not wasted, the peasants have ease of mind.

(4) It can effectively promote business accounting, decreasing costs and increasing labor productivity. In the past, the collective economy was very wasteful; big expenses and high costs were a common phenomenon. Now that responsibility in farming is clearly defined, peasants can suit measures to local conditions and have flexible control; they can in every way make careful calculations and strict budgeting, as well as strive to economize on costs. No longer is there the phenomenon of "the better-off households standing aloof, the crafty households just watching and the honest households being so enraged that they are not willing to do anything," or the phenomenon of the year-round war of fatigue, "working until the last day of the year and starting to work again right after New Year's Eve dinner." As work efficiency increases, it is even possible to find time to develop household sideline production to generate additional cash income.

It should be pointed out that the various forms of job responsibility systems can suit only specific conditions and still await perfection and enhancement. This is even more true in the case of fixing farm output quotas for each household. In adopting this kind of system of job responsibility for backward and impoverished production teams, the resulting increased production is particularly striking, but many new contradictions are also brought about. Some places sum them up as "the ten big disadvantages": disadvantages in the purchase, use, maintenance, and management of large farm tools, in the unified management of the water system and the rational use of water; in the protection of farm cattle, in the prevention of diseases and extermination of insect pests; in experimenting with and promotion of scientific farming; in unified command and concentration of strength to resist

disasters; in unified planning and deployment of manpower to carry out basic construction in agriculture; in the development of commune and production team enterprises and diversified economy; in water and soil conservation; and in the care of the households with the four reliances and households enjoying the five guarantees. Some of the new contradictions are created by decentralized management, but most of them involve problems in work and management. They often occur in places where, in fixing farm output quotas for each household, the leadership allows things to drift. These can be resolved step by step through doing a good job, and are not the inevitable result of fixing farm output quotas for each household. For example, in fixing farm output quotas for each household, some of the production teams of Xuxiaohu Commune of Luan County in Anhui privately distributed 200,000 jin of grain reserves, leading in three instances to the death of farm cattle. The commune's party committee dealt with the matter in time, further established and perfected various measures, and the situation rapidly improved. Throughout this year, the commune's production brigades and teams have newly purchased 27 head of farm cattle, 1 tractor, 1 automobile, 1 oil press, 35 sprayers, and 122 pieces of large farm implements. The whole commune had planned to turn over a total of 40,000 yuan to the higher authorities but has instead realized 52,900 yuan. It had planned to repay 12,400 yuan in loans but has actually repaid 23,000 yuan. The production teams have 43,000 yuan and commune members have 23,000 in savings unseen in recent years. Due to the growth in production, the public welfare fund of the production teams has increased and the care given to the households with the four reliances and households with material difficulties is better than before. Facts have proven that the most prominent contradiction among backward and impoverished commune teams is commune members having no enthusiasm, so that production cannot expand. Fixing farm output quotas for each household has brought into play the initiative of commune members. As production expands, the food and clothing of commune members are assured. With these basic problems resolved, other problems become easier to deal with. However varied they are, the present new contradictions should be regarded as minor problems, compared to the numerous contradictions created by production that cannot expand. If production does not expand, only general poverty will be created, even if the level of collectivization is higher and "purer" and the distribution is more "equal." In contrast, even if the level of collectivization is not so high or so "pure," [the system should] suit the local conditions of productive forces. There are differences in people's income, however unpleasant this may sound, but in the end, income will inevitably keep pace with the growth of production and everyone will become wealthier. We should weigh the advantages and disadvantages and not to give up eating for fear of choking. Whatever the system of job responsibility, we must strengthen leadership, resolve problems on a timely basis, and continue to perfect and make improvements. If we allow things to drift, even good solutions may give rise to bad results.

III. Nature

Since the advantages of fixing farm output quotas for each household outweigh the disadvantages, and since abundant facts have proven that it has a prominent role to play in changing the face of poor production teams, why is this still being widely discussed to this day? This is primarily because there are differences in the understanding of its nature. Some comrades regard it as an indispensable and important type of diversified job responsibility system related to output. Some feel that it is a mistake in direction, as it turns the collective economy into an individual economy, abandons the socialist path, and retrogresses to individual farming.

In Lenin's view, the basic characteristic of socialism is the system of public ownership and distribution according to work. The system of private ownership gives rise to exploitative relations. The system of public ownership denies the system of exploitation and alone can distribute according to work. Distribution according to work is a form of realization of the system of public ownership. These are the two sides to the question. Only by upholding them do we uphold the direction and path of socialism and basically differ from capitalism and all systems of exploitation. The forms of economic management, the scope of labor organization, and the methods of determining payment can be diverse and should be determined according to actual conditions. We cannot arbitrarily say that this type is or is not socialism. It is regrettable that serious confusion has been created in theory and thought because of repeated criticism of the "three self-responsibilities and one contract." Critics regarded pseudo socialism, which is destructive of distribution according to work, as being the only form of socialism, and regarded the good solution, distribution according to work in accordance with actual needs, as being a capitalist restoration. In the course of time, it looked as if fixing output quotas for each household meant distribution of land for individual farming, which in turn was the practice of capitalism. The sight of the word "contract" was more fearsome than the plague. Actually, even the distribution of land for individual farming is not equivalent to the practice of capitalism. Under conditions of capitalism, small-scale farming by individual owners may develop toward capitalism, but this generally cannot happen under socialist conditions. Furthermore, it is a fact that fixing farm output quotas for each household is not equivalent to distributing land for individual farming. We might as well briefly compare the two here:

(1) Distribution of land for individual farming has already broken away from collective economy and has no rights or obligations in it. Fixing farm output quotas for each household is an economic relationship in the collective economy. As a prerequisite, it recognizes the existence of the production team. Its principal economic component is the "production team," and its contractor is the "household." The "production team" uses a "contract" to establish a relationship with the "household" in order to strengthen its management responsibility in it. Each of the two has rights and obligations.

(2) In distribution of land for individual farming, the means of production belong wholly to the individual and are based on the system of private ownership. The means of production, when farm output quotas are fixed for each household, still belongs to the collective. Commune members have only the right to use but not to own the land. Production teams can carry out necessary readjustments regularly or irregularly. The right to own farm cattle and large farm implements also belongs to the collective. After being evaluated, they are handed over to commune members to use or to be used in common by several households. The users have to compensate the production teams for what is consumed, according to the originally fixed value, within a specific period of time.

(3) Distribution of land for individual farming is an individual undertaking in which one assumes sole responsibility for one's own profits or losses and in which one supports oneself by one's own labor. Fixing farm output quotas for each household still upholds the production team as the basic accounting unit. Products from the production part of the contract are centrally distributed by the production team. When doing so, the production team must first deduct production costs, man-

agement expenses, accumulation funds, and public welfare funds before making distributions to individual commune members. Output in excess of quota is the result of overfulfilled labor by commune members, and they are rewarded for it. This is precisely what further realizes the principle of distribution according to work.

From the above comparisons, it can be seen that fixing farm output quotas for each household is substantively different from distributing land for individual farming. On the basis of the system of ownership by the collective, it adopts a method of organized management and a system of job responsibility in the course of production according to the principles of unified planning and accounting. It is similar to the piece rate wage system in industry, and it is relatively easier to assess the fruits of labor. It is a type of management or accounting method that more directly realizes the principle of distribution according to work.

The fixing of farm output quotas for each household, unlike its rather unitary form during the 3 difficult years, has diversified forms suitable to local conditions. Basically, there are three types: first, fixing output quotas of some crops for each household or labor unit; second, fixing output quotas for an entire plot of land for each household or unit, while upholding unified accounting and distribution; third, fixing output quotas for an entire plot of land for each household or labor unit, with commune members having responsibility for output. [In this third type,] individual shares will not be subject to unified distribution by production teams, other than what must be turned over to the state (purchase) and the collective (collective accumulation and social burden)--that is, the "overall job contract" or the "job contract for each household." These are simple and convenient forms that are welcome by the masses. But there is no unified accounting or distribution, and thus production teams can easily become lax and slide into individual farming. Therefore, fixing farm output quotas for each household, particularly for commune teams with task responsibility for each household, should, through work and discussion among commune members, accomplish the following: (1) protect the wealth of the collective and not destroy it by equal distribution; speedily determine forestry rights, forbidding improper felling of trees; (2) reaffirm the ban on purchase and sale of land, the hiring of laborers, and usury; (3) properly make arrangements to care for families of army men and revolutionary martyrs, households enjoying the five guarantees, and other families with material difficulties; (4) preserve, as much as possible, certain collectively operated production items which were originally welcome by the masses and which show good economic results; (5) production teams and commune members must strictly fulfill their own obligations, while debts and creditors' rights must be earnestly cleared up; (6) maintain the organization of production teams and strengthen the central role of various levels of party organization. Merely by achieving this, various forms of farm output quotas for each household can give further play to their positive role, which is beneficial to the consolidation and growth of the collective economy. Therefore, fixing farm output quotas for each household is not a log bridge at all. Like various forms of job responsibility systems, it is the open road of collective economy. If we must compare it to a log bridge, then we can say that if one lived in a ravine among remote mountains, it would be impossible to move and advance if one did not cross the log bridge, and it would be impossible to get onto the level and open road. In such a situation, one crosses the log bridge precisely in order to take the open road. In some places, commune members used to strongly demand that farm output quotas be fixed for each household because this could increase output and

satisfy their hunger; some comrades resolutely opposed it because they felt that the direction was incorrect and they were afraid of criticism. This resulted in the so-called contradiction between direction and output. Actually, direction and output should be consistent. If output cannot be increased, how can direction be correct? In the novel "Pilgrimage to the West" ["Xiyouji"], when the Monk recited the Incarnation of the Golden Hoop, the Monkey King would get a headache. Now when there is a demand to establish various systems of job responsibility, and when backward and impoverished commune teams demand fixed farm output quotas for each household, some comrades likewise get a headache for fear of being "rightist," of being "retrogressive," and of "committing an error in direction." This clearly shows that we are still wearing the Golden Hoop and that our thinking is not yet emancipated. We should have a clear understanding that in outlying mountainous prefectures and impoverished and backward prefectures, the implementation of fixed farm output quotas for each household is a necessary measure for linking up with the masses, expanding production, and solving the problems of clothing and food. In the absolutely favorable conditions of socialist industry, socialist commerce, and collective agriculture in the whole country, fixing farm output quotas for each household under the leadership of production teams will not cause a derailment from the tracks of socialism. There is no danger of restoring capitalism, and there is nothing to be feared.

IV. Future

Our country's territory is vast, its economy is backward, and its development is very unbalanced. As agricultural production differs from industrial production, many aspects suffer from restrictions of natural conditions. This therefore demands that agricultural production must uphold the policy of suiting measures to local conditions and must have greater suitability and flexibility in management and administration. At any place, in any commune team, or even within the same production team, we should proceed from actual needs and actual conditions and permit the simultaneous existence of diversified forms of management, labor organizations, and methods of assessing payment. We should support whatever form of job responsibility system is good and workable, provided it benefits and encourages producers to the fullest extent, and provided it results in an increase in production, income, and commodities. We cannot rigidly adhere to one form and practice "cutting with one broad stroke."

In outlying mountainous prefectures as well as in impoverished and backward ones where the level of productive forces is low and where the masses have great difficulty just to stay alive, the masses can be allowed to have fixed farm output quotas or job responsibility for each household if they so demand. Stability should be maintained for a relatively longer period of time.

For prefectures in general, when the collective economy is relatively more consolidated and production has expanded, fixed farm output quotas should not be set for each household. The energy of the leadership should be placed primarily on further consolidating and expanding the collective economy. Short-term job contracts and payment according to quotas should be practiced. If quotas are reasonable and checking and acceptance are carried out in earnest, this [system] can also determine the quantity and quality of labor relatively more in accord with actual conditions and provide a relatively more reliable basis for distribution according to work. Compared to rigid recordkeeping, rigid distribution, and unrestrained criticism,

this type of job responsibility system is much more scientific and suitable to places where the level of management is relatively higher. Some places practice the fixing of farm output quotas for each group, with payment according to related output. What satisfies the masses, or what can satisfy them after improvement, should be allowed to be stabilized and should continue to be perfected and enhanced.

At present, about 20 percent of the teams in the whole country practice fixed farm output quotas for each household. There are teams that are suitable for it but do not practice it, and there are teams that should not practice it or that can do without it but still practice it. The latter type of commune teams must be allowed to experiment for a couple of years so that practice may be used for summation. Even if the results are not good, this will be limited to only a very few places. If they are good, some new experiences may be sought out.

Commune teams with medium economic and management levels account for more than half of the number of teams in the whole country. This commune teams have many variable internal factors and are susceptible to external influences. By strengthening the work of this type of commune teams alone, we can stabilize the overall situation and promote the entire development of agricultural production. For this type of commune teams, if the current forms of job responsibility systems satisfy the masses, or may satisfy them after improvement, it is better to stabilize them and continue to perfect and enhance them, rather than freely alter them.

Following an expansion in agricultural production and an increase in the level of productive forces, job responsibility systems may undergo corresponding development and changes. Such changes do not start with higher and proceed to lower levels. They are not administrative commands, but are inevitable demands brought about by the growth of development itself. Recently, contracts for specialized trades and job responsibility systems paid according to related output have appeared in many places, one after another. They are systems of job responsibility with good prospects for development. In actual practice, under the unified leadership and management of the production team, there is cooperative division of labor. Labor forces skilled in agriculture should divide the responsibility for fields according to their capacity, and labor forces skilled in forestry, animal husbandry, sideline production, fishery, industry, and commerce should divide the responsibility for different trades according to their capacity. Job contracts for different trades should be fixed for groups, labor, and households according to the principle of facilitating production and management. The production team should unify or assign them various tasks in the course of production according to suitability. Output responsibility should be centrally assigned; overfulfillment and underfulfillment should be rewarded or penalized accordingly. Contractual forms should be used to determine unchangeability for the particular year or several years. Unprecedented progress has resulted from adopting such methods in, for example, the Mengjiaping production team of Mizhi County in Shaanxi, the Dongzhuang production team of Jixian County in Shanxi, the Hungxing production brigade of the Hanggin Hou Banner in Nei Monggol Autonomous Region, and the Zhaojia production team of Lingling County in Hunan. It can be seen from these exemplary models that this type of job responsibility system has an outstanding advantage, compared to fixing farm output quotas for each household or other forms of job responsibility systems that are common, "small, and complete." Not only can it satisfy the demands of commune members in payment according to related output and give play to the initiative of the individual engaged in production, but it can also give play to the advantages of unified

management and cooperative division of labor in the collective economy, thus combining and unifying the two. It favors the growth of diversified management; the popularization of scientific farming and the promotion of commodity production; the maximization of human talents, material usefulness, and land yield; and care for family sideline production by commune members and suitable arrangements for the production and livelihood of households with the four reliances and families with material difficulties. These forms not only suit prefectures with material difficulties, but they can also keep pace with the increase in productive forces and production items and can develop toward a higher level of job responsibility system, with a division of labor among specialized trades that has a stronger character of socialization.

On the basis of their original field management and individual responsibilities, some agricultural production teams that have developed rewards and penalties according to related output also possess certain advantages of contractual responsibility for specialized trades and a job responsibility system, with payment according to related output, that is more familiar and acceptable to the cadres and the masses.

Some commune teams in Jiangxi, Zhejiang, and the northeast, as well as the suburbs of big cities, where diversified management is relatively more advanced and the level of mechanization is relatively higher, have already broken through the bounds of the production team by having the production brigade or even the commune as the unit for carrying out a job responsibility system with contractual responsibility for specialized trades and payment according to related output. This is a new development. In the suburban Xijiao Commune of Jinzhou Municipality in Liaoning, the commune members of 580 households this year carried out such a system and launched a great expansion in agriculture, animal husbandry, and sideline production. For example, the four production teams of Tangzhuangzi production brigade have five milk cows. Last year, the cows were raised by two team members and produced a total of 8,200 jin of milk and a total income of 1,500 yuan. After deducting work-points and fodder, the team paid a compensation of 1,000 yuan. This year the responsibility was assigned to the family of Ren Zhongshan (0117 1813 0810), resulting in an output of 20,000 jin of milk and an income of 4,600 yuan for the whole year. Compared to last year, over 11,000 more jin of milk have been turned over to the state, there are 2,500 more yuan in income for the collective, and an individual net income of 1,600 yuan has been earned.

In the course of establishing job responsibility systems in production, two gratifying new developments have occurred. One is the production contract. In 1978 a minority of commune teams, which first tried it out in launching the great job contract style of job responsibility system related to output, were ridiculed for "fighting a sham war but actually just making noise." Practice has proved the results to be very good, however, and many commune teams have enthusiastically put it into use and have step by step found more systematic experiences. It has turned the old habit of sole reliance on administrative commands into the use of economic methods to lead the economy. If it continues to expand, it may open up a new situation for work in rural areas. The other (new development) is a job responsibility system with contractual responsibility for specialized trades and payment according to related output. It combines and unifies the advantages in the collective economy and the initiative and enthusiasm of commune members. Thus it possesses immense vitality and can develop into the central form of job responsibility system of agricultural production, opening a new path for the administration and management of the collective economy and even for the modernization of agriculture in our country.

Ever since the basic completion of socialist transformation in the system of ownership of the means of production, we have long felt that the problems concerning our country's economic structure have been completely resolved. That is, in the coexistence of the two kinds of socialist systems of ownership, the system of ownership by the whole people and the system of ownership by the collective, each requires only one form. This clearly does not accord with the actual conditions of expansion of productive forces in our country. This kind of understanding not only fails to give play to the advantages of socialism but also destroys them. We must break old habits, emancipate our thinking, daringly study, and, with the prerequisite of the absolute superiority of the means of production in the system of public ownership, allow a specific number of other supplementary aspects to exist, adopt diversified forms of management, open up competition, and develop a commodity economy. Without highly developed commodity production, there will not be great socialized production. Socialism can be established only on the basis of highly developed, great socialized production. Therefore, be it a log bridge, a plank bridge, a stone bridge, or a chain bridge, as long as it can be crossed we will utilize, transform, and develop it. Only in this way can we emerge from the remote mountains crisscrossed by ravines, reach the flat and wide open country, and advance along the golden open road.

9586

CSO: 4007

TRAIN LEADING AGRICULTURAL CADRES IN THEIR 50'S

OW261314 Beijing Xinhua Domestic Service in Chinese 1308 GMT 25 Dec 80

[XINHUA Article: "Importance Must Be Attached to On-the-Job Training of Leading Agricultural Cadres in Their 50's--Sidelights on First Term of Study and Research Class for Leading Agricultural Cadres"]

[Excerpts] Beijing, 25 Dec (XINHUA)--The first term of the study and research class jointly sponsored by the State Agricultural Commission and the CCP Central Committee's organization department for senior leading agricultural cadres opened on 11 November and ended on 25 December. It was attended by 46 leading agricultural cadres from various provinces, municipalities and autonomous regions. They assiduously studied courses on the modernization of China's agriculture, basic agricultural science, agricultural economy and other courses. It has enhanced their technical ability in guiding agricultural production according to the laws of nature and economy. Commenting on what they learned, they are unanimous that one important measure called for by the modernization of agriculture is to pay attention to on-the-job training of leading agricultural cadres, particularly those in their 50's.

There are a great many leading cadres in agricultural departments at various levels who are now in their 50's. Through protracted tempering in the revolution and years of leadership work in the field of agriculture, they have on the whole acquired abundant practical experience and a fairly high proficiency in policy implementation and organization skill. Also, they are still sufficiently energetic. They possess valuable leadership talents. All that is lacking is professional knowledge. Let them make up this missed lesson in professional knowledge as quickly as possible and they will be able to find still greater scope to play their role.

Is it possible for leading cadres in their 50's to raise the level of their professional knowledge in a short time? It certainly is; the performance of the students in the study and research class is eloquent proof. With an average age of 56, each of the 46 students eagerly delved into their studies and none was absent from the class throughout the 1 and 1/2 months the class lasted.

In their long experience in leading the peasants to strive for high yields, many of the leading cadres had a few setbacks and learned many lessons. However, they have not been able to sum up their experience well. This time they realized through study of the basic principle of the ecological system of agriculture that what was

wrong was they paid attention only to wresting high yields from the crops. They neglected the need to provide necessary light, heat, water, air and nutrients for the crops and did not understand they should act in accordance with the law of overall balance in leading agricultural production.

There is great urgency now to build a contingent of cadres who are young, professional and knowledgeable. While striving for this goal, we must never overlook the training of the large number of leading cadres in their 50's. If this is overlooked, we will suffer losses in the structure of the ranks of cadres and in the drive for agricultural modernization. According to the students who attended the study and research class, there is a tendency to neglect leading cadres in their 50's in some localities. It is alleged that these cadres "are a little too young to be retired, but a little too old to be drawn into the leading bodies and can only be used for another few years. That is all." This viewpoint is totally wrong. It is not good to hold this view. We must create the conditions needed to step up the training of the leading cadres in their 50's in order for them to join the young and middle-aged cadres and give full play to their remarkable skills in the drive for agricultural modernization.

CNO: 4007

'RADIO BEIJING' ON TREE PROTECTION, DUAN JUNYI REMARKS

OW211817 Beijing Domestic Service in Mandarin 1200 GMT 19 Dec 80

[Text] All Provincial, Municipal and Autonomous Regional People's Governments are attaching great importance to the urgent circular issued by the State Council on banning indiscriminate, excessive felling of trees. They have taken immediate and serious actions to implement the circular. Various provinces, municipalities and autonomous regions have generally put forward specific measures for protecting forests in connection with their actual situations. They include Guangxi, Guangdong, Henan, Jiangsu, Jilin, Nei Monggol, Ningxia, Qinghai, Yunnan, Sichuan, Shandong, Xizang, Jiangxi, Shanxi, Liaoning, Zhejiang, Gansu, Anhui, Hunan, Guizhou, Xinjiang, Hubei, Hebei and Beijing.

Sichuan Province has proposed the following measures: The felling organizations whose operations have not been approved by provincial authorities and felling organizations that are not operating according to plan should immediately stop their operations, freeze their products and await instructions from higher authorities. To sum up the experiences and lessons gained by Liangshan, Garze and Aba autonomous prefectures in keeping collective forests, work on setting aside collective forests should be temporarily suspended.

At a meeting of the Party Standing Committee and the governor of Henan Province, Duan Junyi, first secretary of the Provincial Party Committee, called on all localities to pay more attention to handling cases of damaging forests. He criticized the secretary of the Lushi County Party Committee for abusing his authority by making furniture with public timber and giving it to friends as gifts.

Working groups, organized by the forestry departments, public security organs, procuratorates and courts in many provinces, municipalities and autonomous regions, have gone to grassroots units to help them implement the instructions issued by higher authorities.

In addition, four working groups, organized by the Ministry of Forestry and led by its vice ministers and advisors, have gone to such provinces as Hunan, Guizhou, Heilongjiang, Jilin, Jiangxi and Gansu to supervise local governments in seriously implementing the urgent circular issued by the State Council.

CHLORAL POLLUTION, ITS DEGRADATION IN SOIL STUDIED

Beijing TURANG XUEBAO [ACTA PEDOLOGICA SINICA] in Chinese Vol 17 No 3, Aug 80
pp 217-226

[Article by Xu Ruiwei [1776 3843 5633], Qian Wenhong [6929 2429 1854], Sun Hansheng [1327 3352 0022], and Zhao Jiahua [6392 1367 7520] of the Nanjing Pedology Institute of the Chinese Academy of Sciences: "Chloral Pollution and Its Degradation in Soil"; Rong Jie [2051 2212], Li Daping [2621 1795 1627], Jin Wei [7246 0251] and An Qiong [1344 8825] participated in the experimental work]

[Excerpts] Chloral is an important organic synthetic material and it is widely used by the farm chemicals industry and factories are distributed throughout the nation. Because of the inappropriate disposing of the three wastes, the environment has been frequently polluted. In 1974, over 60,000 mu of wheat were damaged in the Hangu Ward of Tianjin and over 20,000 mu produced no harvest. The incident was serious. It was caused by pollution of the source of irrigation water of the Suyun River by chloral containing waste water.¹ Similar happenings also occurred in Beijing, Xian and Zhengzhou.^{2,3} Many commune-operated factories in Jiangsu, Zhejiang and Yunnan have utilized waste sulfuric acid containing chloral to produce calcium superphosphate fertilizer and have caused damage to farmland. In Kunming, an incident of chloral polluting the source of drinking water and causing damage to people's health even occurred. This is a type of pollution by our nation's farm chemical industry that causes relatively great damage.

The chemical properties of chloral are unstable. It was discovered in the surveys of farmland pollution that chloral in the polluted soil dissipates relatively fast. But even when all the chloral in the soil has dissipated, within a relatively long time, crops planted as supplementary crops in the soil still show signs of poisoning. It can thus be seen that a clear explanation of the patterns of conversion of chloral in soil has obvious practical significance. In recent years, some studies have been conducted in our nation on the signs of poisoning by chloral, monitoring and measurement methods, and standards of water quality.⁴⁻⁵ There are more studies being conducted abroad in chloral chemistry, techniques of analysis and determination, plant physiology and water pollution but there have been few reports on soil pollution by chloral. This article studies the activities of chloral in the soil and the major conversion products and the cause of continued damage to crops after dissipation of chloral has been determined. The article also discusses the degradation mechanism of chloral in the soil.

I. Experimental Materials and Method

Soil sample: The soils for testing were salinized meadow soil (from the Hangu Ward in Tianjin), paddy soil (from Guangzhou), and red earth (from Jinxian in Jiangxi).

(I) Degradation Experiment

1. **Laboratory incubation experiment:** Fifty grams of wind dried soil (sifted through a 20-hole sieve) was placed in a 100-milliliter triangular flask and a definite quantity of chloral and water solution were added to obtain a specific experimental concentration (25 and 800 milligram/jin of soil). The dampness of the soil sample was maintained at the same level as the moisture content in the field. Incubation was performed in a thermostatic chamber (20°C and 32°C). Samples were taken at regular intervals (three repetitions each time). The contents of chloral and its major degradation products were measured at different times. Sterilized soil was used for parallel contrast experiment.

2. **Pot incubation in thermostatic chamber and pot planted wheat experiment:** Each pot contained 1.5 jin of soil. Chloral solution was added to the pre-determined concentration. Wheat was then sown at different periods of degradation (the 1st, 5th, 20th, 50th, 70th and 100th day). The contents of chloral and its major degradation products in the soil at the time of sowing were measured and the growth situation of wheat was recorded at the same time.

(II) Method of Analysis

1. **Gas-chromatography of chloral in soils. Procedures of extraction:** A sample of 50 grams of soil was used and extraction was performed by shaking the water and soil mixture of 1:1 ratio; 10 milliliters of water phase mixture and 15 milliliters of petroleum ether: ether = 2:1 mixed solvent for extraction 3 times. The extracted liquid was combined with and dehydrated by 5 grams of mercuric sodium sulphate, the volume was fixed and prepared for chromatographic measurements.

Chromatographic conditions: The SP 2305 model gas chromatograph with a deuterium-scandium electron capturing and detecting device and 10 percent silica oil No 1/acid washed 101 white carrier body was used. The inner diameter was 4 millimeters, the glass column was 2 meters long, the entry sample temperature was 160°C, the column temperature was 100°C, the detector temperature was 160°C. The lowest concentration detected by this method was 0.01 milligram/jin of soil.

2. **Determination of Trichloroacetic acid in the soil by head space chromatography.**⁶ The soil sample was extracted by shaking in a water solution of a ratio of 1:1. One milliliter of water sample was siphoned into a 25 milliliter flask with a small opening, then 1 milliliter of concentrated sulphuric acid was added. A silica-rubber stopper was used to seal the opening. Nitrogen gas was then piped into the flask to vacate the air, then a syringe was used to inject through the silica-rubber stopper 0.1 milliliter of methyl alcohol and then the flask was set in 60°C water bath for esterification in thermostatic

conditions for 3 hours. Then a syringe was used to extract 0.25 milliliter of vapor from above the surface of the solution in the flask. Chromatographic entry of sample, chromatographic conditions and instruments were all the same as those used in determining chloral. The lowest detected concentration by this method was 0.01 milligram/jin of soil.

3. Products of degradation of chloral-joint analysis of trichloroacetic acid by chromatography-mass spectroscopy. This was conducted on the MS50 model chromatograph-mass spectroscope. We took 800 milligrams/jin of soil containing chloral and 50 grams of soil sample incubated for 10 days in a pot for extraction in distilled water of 50 milliliters. The aqueous sample was then treated for esterification by the head space chromatographic method for trichloroacetic acid. Then we used a syringe to siphon 1 milliliter of vapor sample above the surface of the liquid for chromatographic-mass spectroscopic measurements.

II. Experimental Results and Discussion

(I) Activity of Chloral in the Soil

The content of chloral in the three test soils varies with time. Chloral can dissipate relatively quickly in different soils, and it dissipates the fastest in the salinized meadow soil of Tianjin. Within 2 days, it dissipates almost completely. The next fastest occurs in the paddy soil of Guangzhou and the slowest in red soil of Jiangxi. The rate of dissipation in a 10-day period in the latter 2 types of soils was 99 and 80 percent, respectively.

Other environmental factors of the soil also affect the rate of dissipation of chloral. When the temperature of the soil rises, the rate of dissipation quickens. The retention period (time needed for 99 percent to dissipate) of chloral in the salinized meadow soil of Tianjin was 24 hours at 32°C and 48 hours at 20°C. When the initial concentration of chloral in the soil rises to 800 milligrams/jin of soil, dissipation at the beginning is slower but the process hastens after 48 hours.

(II) Major Products of Conversion of Chloral in the Soil

1. Determination of the products of conversion. When using the chromatographic method to quantitatively observe the dissipation activities of chloral in the soil, it was discovered that soil containing chloral and incubated showed a peak at retention time 2'07" on the chromatogram not seen on the chromatogram of the original soil. As the time of incubation increased, the chloral peak at 1'05" dropped and the peak at 2'07" increased. The increase and decrease of the two peaks were closely related. The chromatographic retention time measurements preliminarily showed that the peak was the same as that of the sample of trichloroacetic acid (abbreviated TCA). Since trichloroacetic acid easily produces esters, the derivative chromatographic retention time measurement method was used as a test. The liquid extract of polluted soil was subjected to esterification in methyl alcohol and determined by head space chromatography. The experimental results showed that the retention time of the chromatographic peak of

polluted soil after esterification was exactly the same as that of the peak of the esters of the sample of trichloroacetic acid. Joint analysis by gas chromatography-mass spectroscopy was used to further analyze and determine⁷ the unknown peak formed in the chromatogram of polluted soil. The results showed that the characteristics of the mass spectrogram of the derivatives of esterification in the undetermined portion separated by gas chromatography of polluted soil were consistent with the characteristics of the mass spectrogram of the sample of trichloroacetic acid and the documented standard mass spectrogram. It can thus be concluded that chloral in the soil was converted to trichloroacetic acid in the process of degradation.

2. Activity of the products of conversion--trichloroacetic acid in the soil. The salinized meadow soil of tianjin and red earth of Jinxian of Jiangxi are two soils that have relatively great differences in their physical, chemical and microbiological characteristics. The activities and processes of the conversion of chloral into trichloroacetic acid in these two soil samples were observed. As the amount of chloral in the soil reduced, 0.62 milligram/jin of soil of trichloroacetic acid was detected in the salinized meadow soil of Tianjin in the fourth hour. On the fourth day, the highest value was reached (about 76 percent of the initial concentration of chloral) and then it gradually lessened. Dissipation occurred about the 70th day. Trichloroacetic acid was not detected on the fourth hour in red earth of Jiangxi, but 0.12 milligram/jin of soil of trichloroacetic acid was detected in the 12th hour, and the highest value was reached on the 9th day (about 56 percent of the initial concentration of chloral), and dissipation occurred about the 100th day. It can thus be seen that chloral can convert to trichloroacetic acid in different types of soils and the trend of dissipation is similar but the rate of dissipation and the rate of conversion are visibly different.

(III) The Affect of Chloral and Its Product of Conversion--Trichloroacetic Acid Upon the Growth of Crops

Chloral is called a growth disorganizer in plant physiology. It can destroy the polar structure of the protoplasm of plant cells and differentiation, disorganizing cellular and nuclear division, forming diseased tissues and hindering normal growth. Experiments of potted plants show wheat is very sensitive to chloral. When the concentration is above 0.5 milligram/jin of soil, wheat plants become stunted and the leaves curl. The symptoms are visible. When the concentration is above 1.5 milligram/jin of soil, the yield is visibly affected. When the concentration is above 5 milligram/jin of soil, the leaf sheath increases in thickness after the wheat seedlings emerge from the soil, and most of the new leaves of the plants (the first true leaf) cannot emerge fully and gradually wilt. When the concentration in the irrigated water is above 5 milligram/liter, visible damage to paddy rice is caused. The results of the experiment of potted plants show the concentration of trichloroacetic acid that causes damage to wheat and the symptoms of poisoning thus caused are similar to those of chloral.^{8,9}

Incubation and pot planting experiments show that wheat sown during different periods of degradation (the number of days of incubation after chloral has been added to the soil) will manifest visible differences in growth due to different contents of chloral and trichloroacetic acid in the soil.

Wheat sown on the first and the fifth days after degradation begins is most seriously damaged. But the direct cause of damage of the two are different. In the soil sown on the first day, the concentration of chloral is very high, and the damage is mainly caused by poisoning by chloral. In the soil sown on the fifth day, chloral has completely dissipated but damage to wheat is still very serious. The content of trichloroacetic acid in the soil is relatively high (11.0 milligram/jin of soil). Wheat sown on the 20th and the 50th days is damaged to gradually lesser degrees. At the time of sowing, the content of trichloroacetic acid in the soil is 4.5 and 1.5 milligrams/jin respectively. Wheat sown on the 70th and 100th days can grow normally. At the time, the concentration of trichloroacetic acid in the soil had already dropped to below 0.5 milligram/jin. This shows that after the chloral in the soil has dissipated, the degree of damage to wheat is closely related to the content of trichloroacetic acid. Damage is increased when the content of trichloroacetic acid is high. Only when the soil does not contain either chloral or trichloroacetic acid (or the concentration is below 0.5 milligram/jin), will the plants be able to grow normally. In the investigation of the incidence of pollution in Taixian, Jiangsu, we also detected the conversion product trichloroacetic acid in the soil. Supplementary crops planted in fields containing trichloroacetic acid will continue to show signs of poisoning. It can thus be seen that since trichloroacetic acid is strongly poisonous to crops, and it is retained in the soil for a definite period, it is the main cause that continues to damage crops for a relatively long time after chloral in the polluted soil has dissipated.

(IV) Discussion of the Mechanism of Degradation of Chloral in the Soil

1. The process of degradation of chloral. The C-C molecular bond of chloral molecules easily breaks because of the effect of attraction of the trichloromethyl electron. In air and sunlight, it can decompose by oxidation to HC, Cl₂, CO₂ and H₂O. In alkaline solutions, it decomposes to chloroform and formic acid. The density of the electron cloud of the C-H bond on the aldehyde radical of the chloral molecule is relatively low and the oxidation ability is weaker than acetaldehyde. The latter can oxidize automatically in air while chloral can only oxidize to become trichloroacetic acid under the action of definite reagents (such as nitric acid, sodium hypochlorite). But the experimental results we obtained showed that the soil environment was different, and when chloral degraded in soil, trichloroacetic acid was formed first, not products of direct breaking of the C-C bond nor of dechlorination reactions.

Sterilized soil experiments showed the specificity of the degradation process of chloral in the soil environment was closely related to microorganisms. When chloral was added to sterilized soil, as long as the sterile environment was strictly maintained during the operations, trichloroacetic acid did not form at any time during the course of incubation. But when a solution of non-sterilized soil was inoculated into the sterile soil, trichloroacetic acid was formed. This shows trichloroacetic acid is formed by microorganism activity and is a product of biological oxidation.

2. Compositional characteristics of microorganisms in the soil and degradation. Chloral can convert to trichloroacetic acid in the three types of different soils. This shows that microorganisms that can produce such a reaction process exist in common in various types of soils. The amount of bacteria in the salinized meadow soil of Tianjin is higher than those in the red earth of Jiangxi by two numerical orders, and when compared, the former's constant of the rate of dissipation is visibly higher than the latter. It seems that these two are closely related and this shows that in microbiological composition, bacteria are more beneficial for this type of oxidation.

The pH values of the three types of soils tested differ relatively greatly. The constant of the rate of dissipation is higher when the pH value is higher. Considering the mechanism of biological degradation, an appropriate explanation would possibly be that the pH value has affected the characteristics of the microbiological domains, and the latter in turn determines the constant of the rate of dissipation.

3. The activation energy of the manifestation of dissipation reactions of chloral in the soil. According to the Arrhenius equation, the activation energy E can be calculated from the values of the constants k_1 and k_2 of the rates of two different temperatures (T_1 and T_2). The formula is:

$$\ln \frac{k_1}{k_2} = \frac{E}{R} \cdot \frac{1}{T_1 \times T_2}.$$

A sterilized soil sample and a nonsterilized soil sample of the salinized meadow soil of Tianjin were incubated under two different temperature conditions (20°C and 32°C). The values of k obtained from the $\ln C-t$ curve were then used to compute the activation energy. The activation energy of the sterilized soil was 23 kilocalorie/mole. That of the nonsterilized soil was 5.8 kilocalorie/mole. The activation energies differed greatly, showing that the course of the reaction of dissipation of chloral under the two conditions were not the same. The constant of the rate of dissipation in sterilized soil changed greatly with temperature, manifesting a high activation energy, and was thus a typical chemical degradation. In nonsterilized soil, the changes in the constant of the rate of dissipation due to temperature changes were relatively small, manifesting a relatively low activation energy, and reflecting characteristics of biological degradation. Because participation of biological enzymes can change the speed of chemical reactions and reduce activation energy, chloral in the soil can easily oxidize to become trichloroacetic acid. The conversion rate to trichloroacetic acid in the degradation experiment is relatively high (36 and 76 percent). This shows that this type of biological oxidation reaction is the major reaction of dissipation of chloral in the soil. It can be seen in the activity curve of chloral and its product of conversion, trichloroacetic acid, that after all or most of the chloral in the soil has dissipated, the highest value of trichloroacetic acid is reached slightly later, showing that there may possibly be transient type products in the course of conversion. It can be imagined that a certain compound is first formed and then trichloroacetic acid is formed. Because the reaction rate of the latter is slower than

the former, the phenomenon in which chloral dissipates first and trichloroacetic acid is formed later occurs. This hypothesis is consistent with the hypothesis in enzymology, stating that the reactants first form a compound with enzymes and then the compound undergoes a reaction to produce the product.

(V) Treatment of Polluted Soil

There have already been many reports on the study of using trichloroacetic acid as a weeder in the search for the course of further dissipation of trichloroacetic acid in soils. The major processes are microbiological degradation and leaching. According to the physio-chemical properties and the biological degradation characteristics of chloral and trichloroacetic acid, measures that increase the activity of microorganisms in the soil (such as applying additional organic fertilizers and appropriately increasing the moisture content), irrigation and leaching and turning and plowing the soil for drying are all beneficial to revitalizing the soil. The results of experimental treatments in the laboratory are shown. The smaller the residual ratio the more effective the measure is indicated.

The results of the experiment show that the effects of the above measures upon hastening the degradation of chloral and trichloroacetic acid in the soil are very visible. According to the actual conditions of the polluted areas, a certain measure or many measures can be appropriately taken to hasten revitalization of the soil and reduce agricultural losses.

FOOTNOTES

1. Wheat damage research group of Nankai University, 1973: Investigation of the Cause of Damage to Wheat in the Hangu Area in 1974.
2. Agricultural Environment Protection Laboratory of the Academy of Agricultural Sciences of Nanjing City, 1973: Preliminary Report on the Experimental Study of the Problem of Damage to Wheat by the Irrigation of Polluted Water From the Liangshui River.
3. Farmland Irrigation Institute of the Chinese Academy of Agricultural Sciences, 1976: Experimental Results of the Damage to Wheat Caused by Chloral.
4. Xu Ruiwei [1776 3843 5633], Yang Xueyi [2799 1331 5030], Son Hangzhong [1327 3352 0022], et al, 1979: Serious Attention Must Be Paid to the Incident of Damage to Wheat Caused by Chloral, Investigative Report of the Incident of Damage to Wheat in Taixian, Jiangsu.
5. Farmland Irrigation Institute of the Chinese Academy of Agricultural Sciences, 1973: The Problem Concerning the Standard of the Quality of Irrigation Water Containing Chloral and Formaldehyde.
6. Qian Wenheng [6929 2429 1854], Xu Ruiwei [1776 3843 5633] et al, 1979: Head Space Chromatographic Analysis of Trichloroacetic Acid in the Soil.

7. Measured with the help of the mass spectroscopy group of the Chemical Institute of the Chinese Academy of Sciences, thanks.
8. Sun Hanzhong [1327 3352 0022], Zhao Jiahua [6392 1367 7520], Xu Ruiwei [1776 3843 5623], 1977: The Effect of Water and Chloraldehyde Upon Paddy Rice and Its Aftercrop of Wheat. (Work Report)
9. Xu Ruiwei [1776 3843 5623], Li Deping [2621 1795 1627] et al, 1979: Effect of Chloral and Its Product of Degradation in the Soil Upon the Growth of Wheat (Work Report).

9296

CSO: 5000

BRIEFS

AGRICULTURAL, SIDELINE PRODUCTS--This year, the number of deals concluded at the agricultural and sideline products markets in cities throughout China is more than double last year's 1.2 billion yuan. [OW301243 Beijing Domestic Service in Mandarin 1200 GMT 24 Dec 80 OW]

METEOROLOGICAL DEPARTMENTS' RESTRUCTURING--Nanning, 26 Dec (XINHUA)--China's meteorological departments have scored initial achievements in restructuring and reforming their management system. Meteorological departments in 22 provinces and autonomous regions are now led by professional personnel instead of local government personnel. Since the beginning of this year, meteorological departments in 25 provinces, municipalities and autonomous regions have sponsored a total of 120 training classes, which were attended by some 4,700 professional personnel and leading cadres. [Beijing Xinhua Domestic Service in Chinese 0342 GMT 26 Dec 80 OW]

ARTIFICIAL INSEMINATION OF CATTLE--Beijing, 14 Dec (XINHUA)--China is popularizing the artificial insemination of cattle using frozen semen. In 1980, more than 1 million cows were artificially inseminated. In the first 8 months of 1980, China produced some 4 million doses of frozen cattle semen. Since 1978, 29 frozen semen stations and more than 6,000 grassroots insemination stations have been set up in China. [Beijing Xinhua Domestic Service in Chinese 0313 GMT 14 Dec 80 OW]

EARTHWORM CULTIVATION MEETING--A national meeting for exchanging experience in the artificial cultivation of earthworms was held in Shanghai on 16 December. Jointly sponsored by the Agriculture Ministry, the Ministry of State Farms and Land Reclamation and the Food Ministry, the meeting was attended by more than 90 representatives from 18 provinces, municipalities and autonomous regions. China started the artificial cultivation of earthworms in 1978. At present, more than 200 grassroots units are carrying out experimental cultivations. The current meeting lays stress on scientific research and economic results and will formulate next year's plans for the artificial cultivation of earthworms. [Shanghai City Service in Mandarin 1130 GMT 16 Dec 80 OW]

GROUND WATER RESOURCES--Beijing, 12 Dec (XINHUA)--China has verified its ground water and geothermal resources in 13 provinces and autonomous regions, covering an area of 1.99 million square kilometers. In Tengger, Badain Jaran and Ulan Buh deserts, 15 basins totaling 13,600 square kilometers have been found to contain spring water. In northwestern Sichuan grassland, ground water resources with

annual flow of 5.2 billion cubic meters has been found. In the southwestern mountainous areas, 2,058 underground rivers, whose total length is twice the Changjiang River, have been found. Annual water flow is estimated at more than 200 billion cubic meters. Hydrogeological workers have also found more than 1,000 geothermal spots and more than a hundred geothermal belts through surveys. In Yunnan's Tengchong geothermal zone, a high-temperature geothermal belt, 450 kilometers long and 330 kilometers wide, has been located. Water temperature here exceeds 80 degrees fahrenheit. A meeting was held by the hydrogeological corps headquarters in Beijing 4-10 December to commend more than 200 advanced hydrogeological fighters. [Beijing Xinhua Domestic Service in Chinese 1256 GMT 12 Dec 80 OW]

CSO: 4007

BRIEFS

FORESTRY POLICY--Huang Yu, vice governor of Anhui Province, spoke at the province-wide conference on 8 December. He called for implementing the State Council's circular on prohibiting wanton logging of forests. He pointed out that wanton logging still exists in Anhui Province and called for effective measures to protect lumber resources. He urged that efforts be made to propagate and study the State Council's relevant circular; to strictly implement the state's monopoly in the purchase and sale of lumber and bamboo; to immediately suspend logging not included in the state plan; to close the free market for lumber and bamboo south of the Huaihe River; to safeguard the state's, the collective's and the individual's ownership right to bamboo and lumber; and to deal a serious blow at the criminal act of damaging afforested areas. [OW180401 Hefei Anhui Provincial Service in Mandarin 1100 GMT 9 Dec 80 OW]

CSO: 4007

BRIEFS

MINORITY ECONOMY, CULTURE--In Gansu Province, the Jiuquan Prefectural CCP Committee and administrative office have helped Subei Monggol Autonomous County and Aksay Kazakh Autonomous County implement the policy on nationalities and accelerate economic and cultural undertakings, so as to enable the people to become prosperous at an early date. The Prefectural CCP Committee and administrative office have decided that, beginning in 1981, newly built commune- and brigade-run enterprises in these counties will be exempted from income taxes for 5 years, the counties themselves may use profits of state enterprises, food grain for herdsmen will be increased, stipends for minority students will be increased, and each person at livestock breeding communes will receive 2 yuan of medical subsidy every year. [SK100342 Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 5 Dec 80 SK]

SHEEP BREEDING--Lanzhou, 8 Dec (XINHUA)--Chinese scientists have bred by hybridization a new fine wool sheep on a snow-covered mountain grassland in northwest China's Gansu Province in altitudes between 2,600 and 4,000 meters. According to Zhang Songyin, professor of the Gansu Agricultural Institute, the new variety adapts to adverse ecological conditions in high and cold areas. Last summer's measurements of about one thousand adult sheep showed that a ram yielded 7.5 kilograms of wool and a ewe 4.3 kilograms. The wool was over seven centimeters long and could be used to spin yarns of more than 64 counts. The sheep was hybridized with a Xinjiang fine-wool sheep as male parent and local Tibetan and Mongolian sheep as female parents. In Gansu Province there are about 13.3 million hectares of grassland, mostly at an altitude above 2,000 meters. Its local bred sheep used to yield only one kilogram of wool which cannot be used for worsted spinning. Breeding of a new fine wool sheep in high altitudes started as early as 1957. China's other fine wool sheep are all bred in grasslands of low altitudes. [Text] [OW091036 Beijing XINHUA in English 1232 GMT 8 Dec 80 OW]

CSO: 4007

BRIEFS

OVERWINTERING CROPS--According to statistics, by the end of November, Guangdong Provincial had sown overwintering crops on some 7.6 million mu. While less wheat and green manure had been sown than in the corresponding period of last year, more broad beans, rape, winter tobacco, vegetables and autumn sugarcane had been cultivated. The majority of the prefectures have tended overwintering crops well. Shantou Prefecture had sown winter wheat on 600,000 mu by 22 November. Foshan Prefecture has tended well cash crops, including potatoes, vegetables, tobacco and onions, on 250,000 mu. Xinhui and Dongguan counties have done well in vigorously cultivating U.S. azolla to supplement green manure which was not sufficiently sown in winter. At present, Xinhui County has cultivated azolla on some 480 mu, and 90 percent of its communes have cultivated azolla. The county plans to cultivate azolla on 200,000 mu next spring. [Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 11 Dec 80 HK]

HAINAN ISLAND RUBBER PRODUCTION--Hainan Island has been initially built into a natural rubber production base. Since 1951, the island has developed tropical crops, chiefly rubber. The whole island has now set up 97 state farms, including overseas Chinese state farms, with approximately 500,000 staff and workers. These farms have cultivated rubber on some 2.7 million mu. Rubber trees on some 1.2 million mu have now been tapped. The island provides 70,000 metric tons of dry rubber to the state every year and has become the country's main base for natural rubber production. All state farms have also actively developed all kinds of cash crops, such as fruits, and other agricultural produce, animal husbandry and sideline production. State farms and communes throughout the island have set up 651 rubber processing plants, which produce approximately 500 metric tons of dry rubber items per day. Communes and brigades throughout the island will cultivate rubber on some 600,000 mu next year and will produce 5,000 metric tons of dry rubber per year. [HK200800 Guangzhou Guangdong Provincial Service in Mandarin 2345 GMT 8 Dec 80 HK]

CSO: 4007

BRIEFS

LATE RICE PRODUCTION--By the end of November, the Guangxi region had harvested some 18 million mu of late rice, basically fulfilling the year's harvest plan. From 10 to 20 November, the province was busy harvesting autumn crops. The whole region harvested an average of 840,000 mu of late rice everyday, showing an increase of 140,000 mu per day over the same period last year. [Nanning Guangxi Regional Service in Mandarin 1130 GMT 4 Dec 80 HK]

EMERGENCY MEETING--The Guangxi Regional People's Government held an emergency meeting on the morning of 6 December on implementing the State Council's circular on forbidding indiscriminate lumbering. The meeting decided: People's governments at all levels must seriously implement the State Council's urgent circular on forbidding indiscriminate lumbering, and the following measures must be implemented: 1) all lumbering tasks should be stopped from now on since the region has already fulfilled this year's lumbering task; 2) strengthen management of unified sale and purchase of timber; 3) close free timber markets in the forest areas; 4) strictly forbid indiscriminate lumbering; and 5) commune and brigade timber processing factories must carry out rectification and should be run under the supervision of the forestry department. [Nanning Guangxi Regional Service in Mandarin 1130 GMT 7 Dec 80 HK]

PHONE CONFERENCE--Guangxi Regional People's Government held a telephone conference on 8 December, urging all places to prohibit indiscriminate lumbering, protect forest resources and develop forestry. The conference was presided over by Ren Gengqing, regional people's government vice chairman, and Gan Ku, vice chairman, and conveyed the State Council's urgent circular on resolutely prohibiting indiscriminate lumbering. Vice Chairman Zhou Guangchun, spoke at the conference. The conference demanded that leaders at all levels strengthen leadership over the prohibition of indiscriminate lumbering. [Nanning Guangxi Regional Service in Mandarin 1130 GMT 9 Dec 80 HK]

CSG: 4007

HEBEI

BRIEFS

COTTON PRODUCTION--According to a HEBEI RIBAO report, Hebei Province has reaped a bumper cotton harvest. As of 20 November, the whole province had procured 410 million jin of cotton, and total production was estimated to amount to 370 million jin. Average cotton yield per mu amounted to 58 jin which set a new record. All leaders of party and government organs of the province have seriously implemented the spirit of the national conference on cotton production to increase cotton production and enrich the cotton farmers. Since the beginning of this year, 100,000 cotton plantation teams out of 124,000 teams have practiced various cotton production responsibility systems which encourage cotton production. [Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 26 Nov 80 HK]

CSO: 4007

FORESTRY PROTECTION CONFERENCE HELD

SK200945 Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 19 Dec 80 SK

[Excerpts] The Provincial People's Government held a telephone conference on the night of 19 December on implementing the State Council circular on forbidding arbitrary tree felling.

The conference pointed out: Over the past 30 years our province has made great achievements in developing forests and contributed much to the nation's socialist construction. However, many problems remain with regard to forestry protection. Some problems are very serious and cry for immediate solution. On average, our province overcuts some 2 million cubic meters of trees above annual tree-felling plans. The number of trees cut annually has greatly exceeded new plantings, thus causing great harm to forest reserves. Denudation has been very serious. Some 9.8 million mu of natural forests in the province's 52 forestry areas under the jurisdiction of municipalities and counties have been damaged over the past 10 years or so. The management, marketing and transportation of timber are in a mess in our province. All the province's forestry, supply, and No. 2 light industrial departments, commune and brigade-run enterprises, cooperative offices and state-owned farms and forests have a hand in this business. Some forestry bureaus and forest administrations market timber by themselves. A great number of communes and brigades and other units in forestry areas have established lumber mills and process locally purchased timber in pursuit of extraordinary profits. Cases of denudation and of beating forestry guards have occurred one after another, many of which remain unsolved.

The conference urged all localities to, first of all, raise the level of understanding of leading bodies at all levels and make them recognize the significance of protecting and developing forestry resources. We must stop cutting more trees than prescribed by the plans. The various forestry bureaus and forest administrations must strictly abide by the timber production plans devised by provincial authorities. Nonforestry departments must stop cutting trees and withdraw from forest areas. Farms are not allowed to cut trees in forests under their jurisdiction without authorization.

CSO: 4007

CONFERENCE URGES PREPARATIONS FOR PLOWING, SOWING

SK280700 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 27 Dec 80

[Excerpts] According to our sources, the Provincial Party Committee and the Provincial People's Government held a telephone conference on the evening of 26 December, urging all localities to quickly complete grain threshing and delivering and shift the emphasis of rural work to preparing for plowing and sowing to ensure a better harvest next year.

The following five tasks were set forth at the conference in view of the insufficient material supplies, next spring's drought and waterlogging threats and the prevailing dilatory workstyle:

First, quickly complete grain threshing and delivering to secure as much time as possible to prepare for spring plowing and sowing. The province has completed 90 percent of threshing and has overfulfilled this year's grain procurement plan. However, the progress is uneven. Twenty-one municipalities and counties have not completed threshing. Some have completed only half their work. This will inevitably affect preparations for plowing and sowing. The Provincial Party Committee and the People's Government urged concerned prefectures and counties to strengthen the leadership over those counties and communes where threshing has not been completed and adopt effective measures to help them promote their work. At the same time, they should transfer personnel to prepare for plowing and sowing.

Second, do a good job in farmland capital construction. Next year, the province will have waterlogging in the eastern areas, drought in the western areas and both in the central areas.

Third, mobilize the masses to support preparing for plowing and sowing with sufficient material supplies. Our current problem is a farmyard manure shortage. From now on, much greater manpower in rural areas should be transferred to collecting and producing farmyard manure. Professional teams should work together with peasants to collect and produce as much fertilizer as possible. Where conditions permit localities should produce grass charcoal. About 80 percent of the manure needed next year must be collected and produced before the spring festival. The remaining 20 percent should be prepared before spring plowing. Party committees and governments at all levels should pay special attention to selecting, storing and preserving seeds. [Words indistinct]. Conscientious efforts should be made to have farm machinery overhauled this winter. Preparations for animals to tide over winter should be undertaken.

Fourth, do a good job in winter sideline production to accumulate funds for next year's agricultural production. Sideline occupations are an important way to solve funding problems through self-reliance. Leaders at all levels must include sideline production in their work agenda and ensure it is successfully enacted.

Fifth, strengthen leadership over the work of preparing for plowing and sowing.

CSO: 4007

BRIEFS

GRAIN PROCUREMENT--The Heilongjiang Provincial People's Government has decided to lower grain procurement quotas for paddy rice growing brigades who failed in the past 5 years to overfulfill their grain procurement plan by 40 percent. As of today, 461 poor paddy rice growing brigades have been allowed to reduce grain procurement quotas. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 8 Dec 80 SK] According to the statistics compiled by the Heilongjiang Provincial Grain Procurement Office, on 9 December Heihe Prefecture and 11 other municipalities and counties have fulfilled their grain procurement task. Hailun County had sold an extra 40 million jin to the state by 7 December. Qingan County had overfulfilled its soybean procurement plan by 12.7 percent and paddy rice by 27.2 percent on 7 December. [Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 9 Dec 80 SK]

COUNTY GRAIN--By 4 December, Hailun County, a key grain growing county in Heilongjiang Province, had overfulfilled its grain procurement task for 1980. On an average, the county sold 2,600 jin of grain to the state per day. The county is now vigorously selling its surplus grain to the state. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 6 Dec 80 SK]

INCREASED GRAIN PRODUCTION--In Heilongjiang, Yian County, which had suffered a production decline over the past 5 years, increased their grain and soybean production this year. Per mu grain yield increased to 180 jin this year, while in the past few years it was about 100 jin. The county is expected to sell to the state 50 million jin of marketable grain this year. [Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 14 Dec 80 SK]

GRAIN PROCUREMENT--Songhua Jiang Prefecture, Heilongjiang Province, has overfulfilled the 1980 state grain procurement plan by 380 million jin. The prefecture is now selling 40 million jin of surplus grain to the state each day. As of 18 December, the prefecture marketed 1.54 billion jin of grain and soybeans to the state. [SK212245 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 20 Dec 80 SK]

DROUGHT AFFECTS FARMLAND--Over the past few years, drought has become more and more serious in Suihua Prefecture, Heilongjiang Province. Some 3,126 production teams in Anda, Zhaodong, Zhaoyuan, Zhaozhou, Lanxi, Qinggang, Mingshui, and Wangkui counties and some 4.39 million mu of farmland have been affected. These production teams are vigorously building irrigation projects to strengthen the drought combating capacity. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 22 Dec 80 SK]

SNOW-COVERED CROPS--Harbin, 12 Nov (XINHUA)--Cadres, peasants and state farm workers in Heilongjiang Province have recovered some 7 million mu of the more than 8 million mu of autumn-ripening crops buried under the snow that fell 24-27 October. Hejiang and Mudanjiang prefectures as well as several dozen state farms which were seriously hit by the snow daily engaged more than 4 million people and 160,000 mechanized and animal-drawn vehicles to rush-harvest and transport the buried crops. [OW161823 Beijing Xinhua Domestic Service in Chinese 1417 GMT 12 Nov 80 OW]

WASTELAND RECLAMATION--Harbin, 15 Nov (XINHUA)--Large numbers of new villages have appeared on the wasteland in Heilongjiang's Hejiang and Heihe prefectures. They are reclamation centers built by the nearby communes with farm machinery bought with state loans. Sixty-nine such centers have been built this year, in addition to the 86 already built last year. Over the past 2 years, these reclamation centers have reclaimed 2.93 mu of wasteland. [Beijing Xinhua Domestic Service in Chinese 0120 GMT 15 Nov 80 OW]

FARM OUTPUT--Owing to the serious droughts this year, Heilongjiang Province's total output of grain, soybeans and potatoes decreased by 1.2 billion jin from the 1979 level. However, the province's state-owned farms made rapid progress in production. Their output totaled 6.4 billion jin, an increase of 860 million jin over their 1979 level. Grain output by state-owned farms accounts for 22.8 percent of the province's 1980 total grain output. State-owned farms account for 36.4 percent of the province's marketable grain. [Harbin Heilongjiang Provincial Service in Mandarin 2200 GMT 18 Dec 80 SK]

CSO: 4007

BRIEFS

FORESTRY CONFERENCE--From 10 to 13 December, the Henan Provincial People's Government held an urgent conference on forestry work. The conference called on the province to seriously implement the State Council's urgent circular by taking effective measures, to mobilize all people to resolutely prohibit indiscriminate logging and to actively carry out the afforestation activities this winter and next spring. Dai Suli, Provincial CCP Committee secretary and vice provincial governor, spoke at the conference. [Zhengzhou Henan Provincial Service in Mandarin 1100 GMT 14 Dec 80 HK]

CSO: 4007

BRIEFS

COMFORT VISITS--Led by Xie Wei, vice chairman of the Hubei Provincial CPPCC Committee, the production and relief inspection group of the Provincial CPPCC Committee went deep into the affected areas in Xiaogan and Hanchuan counties to pay comfort visits to victims. The group comprised 14 NPC delegates, national CPPCC Committee members and standing committee members and members of the Provincial CPPCC Committee. Some of them are experts in and professors of culture, education, science, technology, medicine and public health. Proper arrangements have been basically made for the livelihood of the people in the affected areas and farmland and water conservancy projects are being repaired. Production has been restored relatively quickly. Autumn sowing has been completed and overwintering crops, such as wheat and rape, are growing well. The inspection group returned to Wuhan on the afternoon of 9 December. [HK200724 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 10 Dec 80 HK]

MEETING ON RELIEF--The Hubei Provincial CCP Committee held a standing committee meeting on 8 December and decided to set up a Provincial CCP Committee production and relief leadership group. The production and relief leadership group will consist of provincial responsible comrades headed by Huang Zhizhen, secretary of the Provincial CCP Committee and vice governor, and (Ren Zhonglin), deputy secretary of the Provincial CCP Committee. The meeting also demanded that all disaster-stricken areas set up similar groups to rapidly speed up production, provide people with disaster relief and reduce the people's anxieties. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 9 Dec 80 HK]

RELIEF EFFORTS--Hubei Province has done well in providing disaster-stricken areas with relief and has ensured people's grain ration supply. At present, some 112,000 houses in disaster-stricken areas have been repaired, which accounts for 36.9 percent of the collapsed houses. All areas have already given 250,000 yjan and some other necessities to solve the people's urgent problems. The province has arranged for 770,000 laborers in the disaster-stricken areas to speed up industrial and sideline production. Medical departments at all levels have sent some 280 medical teams to these areas to control the spreading of diseases. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 9 Dec 80 HK]

TELEPHONE CONFERENCE--The Hubei Provincial People's Government held a telephone conference on 2 December urging the cultivation of overwintering crops, Vice Provincial Governor Huang Zhizhen spoke at the conference, saying that there were still some shortcomings in cultivating overwintering crops, though the overall

situation was satisfactory. He demanded that all areas do the following three tasks well: 1) strengthen and perfect the production responsibility systems and further motivate the peasants' activism; 2) popularize scientific methods of cultivating overwintering crops and raise the level of scientific cultivation and 3) solve fertilizer and capital problems well. Concluding, Huang Zhizhen demanded that leaders at all levels strengthen their leadership over cultivating overwintering crops and solve all relevant problems. [HK121458 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 3 Dec 80 HK]

FORESTRY MEETING--The Hubei Provincial emergency meeting for directors of all local forestry bureaus throughout the province was recently held. Wang Zhizhen attended the meeting and spoke. He said: The State Council's circular on forbidding indiscriminate lumbering is appropriate for our province. We must now promote ideological education for the people and popularize this circular. The Provincial People's Government must immediately issue an emergency circular on forbidding indiscriminate lumbering. Departments concerned should also carry out inspections check excessive lumbering. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 11 Dec 80 HK]

RAT EXTERMINATION--The Hebei Provincial People's Government recently issued a circular demanding that all places launch the masses to do a good job in rat extermination. The circular points out: The rodent population has risen everywhere in the province in recent years. Many places are seriously infested by rats, which destroy growing crops, steal grain, damage clothing, pollute food and even bite infants. The circular puts forward the following demands in order to control and exterminate rats as rapidly as possible, support production and construction and protect people's health: 1. Leaders at all levels must fully understand the importance of rat extermination work and strengthen leadership over it. 2. Adopt various methods to exterminate rats in light of local conditions. In connection with the patriotic public health movement, it is necessary to look after granaries and foodstuffs well, do a good job in sanitation work inside and outside the towns, block rat holes, cut the rats off from their sources of food and water and destroy the environment and conditions for their existence. It is necessary to pay attention to using the natural enemies of rats to exterminate them. We should promote the breeding of cats and protect owls and other wild creatures whose main diet is rodents. 3. Seize favorable opportunities for launching shock attacks to exterminate rats. 4. Departments concerned must closely cooperate in this work. [Excerpta] [HK130544 Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 3 Dec 80]

CSO: 4007

BRIEFS

AGRICULTURAL PRODUCTION FORUM--At the forum which was held by the Hunan Provincial Agricultural Committee, professors and experts of the Provincial Agricultural Science Institute, Provincial Agricultural College, Provincial Normal College, Provincial Agricultural Department and Provincial Meteorological Bureau recently put forward their valuable opinions on how to promote agricultural production next year and on what measures should be taken scientifically and technologically. They held that over the past 30 years, the province has scored many achievements in agricultural technology. However, due to the 10-year period of turmoil, some leaders have not attached sufficient importance to the promotion of agricultural production and many effective measures have not yet been popularized. To promote agriculture next year, the key lies in leaders at all levels. These leaders should enhance their understanding of scientific knowledge. It is necessary to continue to establish a system popularizing agricultural technology, to organize and train the force of agricultural technicians and to popularize agricultural scientific knowledge. Only by firmly grasping these weak links can we promote agricultural production. [Changsha Hunan Provincial Service in Mandarin 2315 GMT 11 Dec 80 HK]

CSO: 4007

BRIEFS

COMMUNE CADRES--Approved by the departments concerned under the State Council and the Jiangsu Provincial People's Government, 7 prefectures and Nanjing Municipality in late November selected some 500 cadres through examination in efforts to strengthen the operation and management of rural communes. [Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 15 Dec 80 OW]

VEGETABLE SUPPLY MEETING--The Jiangsu Provincial People's Government recently held the second urban vegetable supply meeting and issued a circular on 10 December urging all municipalities to take resolutely measures to solve the problem of vegetable supply. The circular calls for building high- and stable-yield bases to increase the production of vegetables and stresses the necessity to reform wage and management systems. All municipal governments should strengthen the leadership over vegetable supply. [OW180519 Nanjing Jiangsu Provincial Service in Mandarin 2300 GMT 14 Nov 80 OW]

CSO: 4007

BRIEFS

FISH BREEDING--The Jiangxi Provincial People's Government has readjusted fishery policy and aroused peasants' enthusiasm in fish breeding. This year, the province's fish farm acreage has increased by more than 200,000 mu and some 320 million fish fries have been cultivated. From January to October, the province produced more than 49,000 dun of fish, topping the same period last year by more than 11,000 dun. [Beijing Domestic Service in Mandarin 0400 GMT 16 Dec 80 OW]

TONG OIL PROCUREMENT--From January to October this year, Jiangxi Province procured some 1.3 million jin of tong oil, 27.6 percent more than in the corresponding period of last year. Output of tong oil last year was some 6 million jin but the quantity procured by the state was decreasing. The province procured only 2.29 million jin of tong oil last year, fulfilling slightly more than half of the quota for procurement. The quantity of tong oil procured by the province and supplied by other provinces was less than one-fourth of the quantity needed by the province. The fact that supply fell short of demand adversely affected production in all trades and the people's livelihood. [HK110750 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 27 Nov 80 HK]

CSO: 4007

BRIEFS

JILIN HOGS--Jilin Province has 6.24 million head of hogs now, 6.7 percent more than in early 1980. Hogs raised by individuals are 5.41 million head. By the end of November, the province had procured 1,444,000 head of hogs. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 14 Dec 80 SK]

MINOR FALL HARVESTS--Changchun, 5 Dec (XINHUA)--As of the end of October, Jilin Province had procured "minor fall harvest" products of a total worth of 73 million yuan, thus overfulfilling this year's procurement plan by 12.5 percent. The products procured include acorns, wild grapes, honey, membranous milk vetch roots, wild mushrooms, edible fungus, almonds and magnoliavine fruits. [OW091044 Beijing Xinhua Domestic Service in Chinese 0114 GMT 5 Dec 80 OW]

CAVE COLD STORE--Beijing, 4 Dec (XINHUA)--Engineers have carved a large cavern in a mountainside in the Changchun area of Northeast China's Jilin Province to make a cold store which can hold 15,000 tons of meat. The ice box holds 300 tons of ice. Provincial authorities said that the store will ease the difficulties in ensuring regular supplies of meat to the industrial areas of the province and the more remote mining and forest communities. In Sichuan, Southwest China, which is the country's leading pig-raising province, two new 9,000-ton cold stores have just gone into operation in the cities of Chongqing and Chengdu. China planned to increase its nationwide cold storage capacity by 150,000 tons by the end of this year. [OW050649 Beijing XINHUA in English 0723 GMT 4 Dec 80 OW]

AGRICULTURAL PRODUCTION--Dehui County, Jilin Province, reaped a bumper harvest in agricultural production this year. Output of grain and soybeans is 1.6 billion jin, up 20 million jin over last year. Its per capita income is 130 yuan. In addition, some 1.64 million mu of farmlands were tractor-plowed this year. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 20 Dec 80 SK]

GRAIN CONFERENCE--The Jilin Provincial Government held a telephone conference on 5 December to urge the people to thresh and deliver grain vigorously. Despite natural adversities, Jilin Province still enjoys favorable conditions for fulfilling or overfulfilling its grain procurement task for this year. It was noted at the conference that priority in electricity and oil supply should be given to grain threshing work, that the quality of grain should be improved and that market management should be strengthened during grain procurement period. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 5 Dec 80 SK]

OIL-BEARING SEEDS--Jilin Province has a bumper harvest of oil-bearing seeds this year. By 5 December the province had procured 420 million jin of oil-bearing seeds, 119 million jin or 39.7 percent more than the state-assigned plan. A key oil-bearing crop growing area, Baicheng Prefecture, has procured 272 million jin of oil-bearing seeds, 170 percent more than in 1979. [Changchun Jilin Provincial Service in Mandarin 2200 GMT 9 Dec 80 SK]

AGRICULTURAL YIELDS--Despite natural adversities such as cold temperatures, windstorms, heavy rain, hailstorms and early frost, Siping prefecture, Jilin Province, set a new record in agricultural production. The total grain and soybean output is expected to exceed 4.56 billion jin, 6.5 and 44.3 percent higher, respectively than in 1979 and 1977. The average per mu yield of its 178,000 mu of beetfields is 2,700 jin, and the total output is 480 million jin, 240 million jin more than in 1979. The output of tussah silkworm cocoons is 1,000 dan more than in 1979. The per-unit yield and the quality of tobacco are also better than in 1979. [SK120854 Changchun Jilin Provincial Service in Mandarin 1100 GMT 4 Dec 80 SK]

FARMLAND CONSERVATION PROJECTS--Jilin Province has recently convened a conference of water conservation bureau directors. The conference pointed out that it is essential to shorten the construction period of farmland conservation work in order to make better returns on the investment. Mismanagement, low quality and waste exist in our province's water conservation construction. From 1979, our province's water conservation departments have implemented the policy of readjustment and slashed the investment on farmland conservation projects. The province's 1980 investment on farmland conservation projects decreased by 18.7 percent from that of 1978 and by 21.5 percent from that of 1979. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 23 Dec 80 SK]

CSO: 4007

LIAONING

BRIEFS

CATTLE EXPORTS--Liaoning Province exported some 10,000 cows to Hong Kong and Macao in 1980, a record for provincial cow exports. [SK182130 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 17 Dec 80 SK]

MUNICIPAL GRAIN--By 14 December, Shenyang Municipality, Liaoning, had overfulfilled its annual grain procurement plan by 19.58 million jin and had put 1,191,580,000 jin of grain in storage, an increase of 148.25 million jin over 1979. [Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 15 Dec 80 SK]

SALT PRODUCTION--Liaoning prefulfilled its annual sea salt production plan by the end of November, an increase of 150,000 tons, or 47 percent, over the figure for the corresponding 1979 period. [SK120854 Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 6 Dec 80 SK]

GRAIN OUTPUT--Seventeen key grain-producing counties in the middle part of Liaoning Province had good harvests despite natural disasters. According to preliminary estimates, their total output of grain and soybeans is expected to be 11.67 billion jin, an increase of 2 percent over that of 1979, which was also a bumper harvest year. The total output of grain and soybeans of Haicheng County, which registered a marked increase, was up by 100 million jin over the 1979 level. Changtu County's total output increased by 8 percent over 1979 and offered 800 million jin of marketable grain to the state. [OW090714 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 2 Dec 80 SK]

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BRIEFS

QINGHAI FIRES--According to statistics compiled by the public security and fire control departments, 218 fires broke out in Qinghai Province during the January-November period, claiming 11 lives, injuring 35 persons, destroying 370,000 jin of grain and 20,000 mu of grasslands and resulting in 808,000 yuan in economic losses. In November alone, Qinghai Province had 48 fires. Four persons died, and eight were injured. [SK182124 Xining Qinghai Provincial Service in Mandarin 1030 GMT 17 Dec 80 SK]

TREE FELLING--According to Qinghai Provincial Forestry Bureau, (Xifusha) forest zone in Tongren County has been seriously damaged. Dozens of people come to cut trees every day and this 300-mu forest zone has become an area almost without trees. Another forest zone in the country, (Shuangpenxi) forest zone, has also been damaged seriously since autumn sowing. The Provincial Forestry Bureau urged the departments concerned of the Huangnan Tibetan Autonomous Prefecture and Tongren County to take measures to stop illegal felling of trees and to punish those involved. [Xining Qinghai Provincial Service in Mandarin 1030 GMT 12 Dec 80 SK]

GRAIN PROCUREMENT--The Qinghai Provincial People's Government issued a notice recently to commend Xining Municipality, Huangnan Tibetan Autonomous Prefecture and Haidong Prefecture for overfulfilling their grain procurement tasks. As of 30 November, Xining Municipality overfulfilled the annual grain procurement task by 4.23 percent, Huangnan Tibetan Autonomous Prefecture overfulfilled this task by 3.23 percent and Haidong Prefecture by 0.09 percent. Meanwhile, Huangnan Tibetan Autonomous Prefecture has basically fulfilled the annual oil-bearing crops procurement task. Hualong Hui Auto County overfulfilled the annual oil-bearing crops procurement task by 7.2 percent and Minhe County overfulfilled this task by 6.6 percent. [Xining Qinghai Provincial Service in Mandarin 2330 GMT 14 Dec 80 SK]

DROUGHT STATISTICS--Haidong Prefecture, Qinghai Province, has been afflicted with drought recently. According to statistics, some 80,000 people and 7,000 heads of livestock in Minhe and Ledu counties have difficulties in obtaining drinking water. The Provincial Civil Administrative Office, the Provincial Financial Office and the Haidong Administrative Office allocated some 150,000 yuan to drought-stricken areas to help relieve the shortage of water. [Xining Qinghai Provincial Service in Mandarin 1030 GMT 13 Dec 80 SK]

SHANDONG

BRIEFS

GRAIN, COTTON--Pingdu County, Shandong Province, set records in grain, cotton and peanut production this year. It reaped 1,157,000,000 jin of grain, 20 million jin more than the 1979 figure, and sold 220 million jin to the state, 110 million jin more than the state-assigned quota. The county harvested 38 million jin of cotton, 16 million jin more than the 1979 figure, and sold 37 million jin to the state, 17 million jin more than the state-assigned quota. It harvested 88 million jin of peanuts and sold 36 million jin to the state, doubling the state-assigned quota. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 21 Dec 80 SK]

COTTON HARVEST--Linqing County, Shandong Province, reaped a total of 500,000 dan of cotton this year, as compared with 223,000 dan in 1979, from its 387,000 mu of cotton fields. By 22 November, 482,671 dan of ginned cotton was procured. [SK100418 Jinan Shandong Provincial Service in Mandarin 2300 GMT 5 Dec 80 SK]

GRAIN CIRCULAR--The Shandong Provincial Industry and Commerce Bureau, Grain Office, Supply and Marketing Cooperative, Communications Office and Jinan Railway Bureau recently issued a joint circular calling for efforts to strengthen management of grain and oil-bearing seed markets and stop outflow of grain and oil-bearing seeds. The circular states that purchases and sales of grain, fat and oil-bearing seeds at negotiated prices are to be handled by grain departments. No other departments are allowed to do such business. The circular states that no enterprises or organizations are allowed to buy grain and oil-bearing seeds from rural areas, no production teams are allowed to sell their grain and oil-bearing seeds at negotiated prices before they fulfill their procurement quotas, and no railway and transportation departments are allowed to transport grain and oil-bearing seeds to other provinces without the permission of the Provincial Grain Office. [SK160635 Jinan Shandong Provincial Service in Mandarin 2300 GMT 14 Dec 80 SK]

GRAIN OUTPUT--Shouguang County, Shandong Province, sold over 13⁵ million jin of grain to the state in 1980, 58.6 million jin more than called for in the state plan. [SK250846 Jinan Shandong Provincial Service in Mandarin 2300 GMT 24 Dec 80]

COTTON PRODUCTION--Some 2.7 million mu cotton fields in Liaocheng Prefecture, Shandong Province, have yielded 3 million dan of cotton this year, a 200 percent increase over 1979. On an average, each cotton farmer has handed over 79 jin of commodity cotton to the state and per-capita distribution has increased from 54.8 yuan in 1979 to over 110 yuan. Total earnings from cotton of the prefecture exceed 670 million yuan which is nearly 240 percent of the total earnings from agriculture in 1979. [SK141235 Jinan Shandong Provincial Service in Mandarin 2300 GMT 9 Dec 80]

ANIMAL HUSBANDRY--By the end of September 1980, Shandong Province had 3,463,000 head of draught animals, 0.6 percent more than the figure calculated by the end of 1979. In Heze Prefecture, the number of draught animals has increased to 419,800--32,900 head more than in 1979. [SK222214 Jinan Shandong Provincial Service in Mandarin 2300 GMT 20 Dec 80 SK]

GRAIN YIELD--Sishui County, Shandong Province, increased its per mu grain yield and per mu peanut yield by 59 jin and 49 jin, respectively, over the 1979 figures. Total income from agriculture is expected to be 52.25 million yuan this year, 21 percent higher than in 1979. [SK120900 Jinan Shandong Provincial Service in Mandarin 2300 GMT 7 Dec 80 SK]

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ANIMAL HUSBANDRY--According to statistics, by the end of September, Sichuan Province had raised 75.21 million head of various kinds of animals, 5 percent more than in the corresponding period of last year. Commune members' households had raised some 70,000 draft cattle. The province had procured 530,000 pieces of cattlehide, 3.25 million pieces of goatskin and 80,000 jin of rabbit hair. [Chengdu Sichuan Provincial Service in Mandarin 2300 GMT 27 Nov 80 HK]

TREE CUTTING--Chengdu, 22 Dec (XINHUA)--Sichuan Province ranks second in China's virgin forest reserves. However, due to indiscriminate tree cutting over a long period, the province's forest reserves have been seriously depleted. According to estimates of the Provincial Forestry Department, the province's annual tree cut total 30 million cubic meters while the annual tree growth only amount to 15 million cubic meters. If this trend is unchecked, the province's virgin forests will be completely wiped out in 20 years. To combat indiscriminate tree cutting, the province has organized some 2,800 forestry personnel of the public security organs, procuratorial organs and people's courts to inspect various localities. [OW220107 Beijing Xinhua Somestic Service in Chinese 1320 GMT 12 Dec 80 OW]

EDIBLE OIL--Due to growing increases in edible oil production, Sichuan Provincial departments concerned decided that grain rational coupons could be used in exchange for edible oil. The advantages of this measure are: 1) it will serve to promote the sale of edible oil in the municipalities; 2) it will ease the state's problem of edible oil storage; 3) the people's need for edible oil will be satisfied. The exchange method works as follows: A person presents his grain rational coupon at the grain counter and can receive 1 jin of edible oil in exchange for 6 jin of grain. [Chengdu Sichuan Provincial Service in Mandarin 2300 GMT 29 Nov 80 HK]

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XIZANG

BRIEFS

MEAT PRICES REDUCED--Lhasa, 13 Dec (XINHUA)--Retail prices for beef, mutton, frozen pork from inland areas and local and canned pork in all parts of Xizang Autonomous Region have been reduced since 16 November. Compared with original retail prices, beef was reduced 9.6 percent, frozen pork from inland areas by 16.7 percent, and local pork was lowered to the 1979 price. [Beijing Xinhua Domestic Service in Chinese 0747 GMT 13 Dec 80 OW]

CSO: 4007

CHEMICALS USED TO INDUCE MALE STERILITY IN GENG RICE

Kunming YUNNAN NONGYE KEJI [YUNNAN AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 3, 25 Jan 80 pp 43-44

[Article by Xiong Jianhua [3574 1696 5478] and Fan Pinggui [5400 0756 6311] of the Yunnan Provincial Academy of Agricultural Sciences: "Brief Report on Chemically Induced Male Sterility in Geng Rice"]

[Text] At present, there are two ways to utilize heterosis to increase the unit area yield of paddy rice. One is selective breeding of the three lines to form hybrids, and the other is utilizing chemicals to induce male sterility in the female parent variety in specific and strongly superior combinations, causing the pollen to lose its fertility while not affecting the ability of the pistils to be fertilized normally. Then the treated female parent is coupled with the male parent variety to produce hybrids for production and application. Hybrid xian rice that has been chemically emasculated in Guangdong Province already covers an area of over 1 million mu, and a definite increase in yield has been realized. We began to conduct experiments and research in chemical emasculation of geng rice in 1978. The results are as follows:

1. Period of Spraying Chemicals

The emasculating agent No 1 (with an effective content of 97 percent of methyl arsenic acid zinc) prepared by the crop heterosis research and utilization coordination and cooperation group of Guangdong Province, and 3 concentrations of 150 ppm, 200 ppm and 250 ppm are used. Spraying was done during the period of meiosis of the pollen mother cell, filling period and the period of completion of maturation. At this time, the distance between leaf supports of the boot leaves is -4 to 11 centimeters. Each treatment covers 150 to 200 plants. Two varieties, the 77-136 and the 6 ke lao were used in the experiment. They were sprayed with 200 ppm of the chemical to induce male sterility. Except for the nearly 8 percent fruiting resulting from self-pollination after spraying the 6 ke lao during the period of completion of maturation of pollen, the percentage of sterility resulting from spraying during all other periods was all 100 percent, but both were affected by the chemical and closed glumes occurred, and the earlier the chemical was sprayed the higher the percentage of closed glumes. The different varieties reacted differently to the chemical. (see Table 1)

Table 1. The Effect of Chemically Induced Male Sterility by Spraying During Different Periods

200ppm									
(1)	(4)	(7)	(11)	(12)					(18)
品种	叶位	(7) 发育时期	株数	(13) 总粒数	(14) 总粒数	(15) 不育率%	(16) 闭颖数	(17) 闭颖率%	备 (18) 注
(2) 77-138	-2~+2	(8) 母本细胞减数分裂期	80	802.5	802.5	100	120.2	59.41	(19) (20) 出现六分之一黑颖现象
	4~8	(9) 花粉充实期	80	814.3	814.3	100	102.2	48.16	
	11以上	(10) 花粉成熟期	35	170.3	170.3	100	68.5	27.61	
(2) 雲 21	-4~8	(8) 母本细胞减数分裂期	80	174.7	174.7	100	55.9	33.71	
	1~7	(9) 花粉充实期	80	189.3	189.3	100	21.4	11.31	
	10以上	(10) 花粉成熟期	23	102.6	100.0	98.39	10.6	11.37	
(3) 雲 雲	-2~+2	(8) 母本细胞减数分裂期	80	122.6	122.6	100	36.3	29.64	(21) (22) 同上
	3~8	(9) 花粉充实期	80	120.4	120.4	100	17.1	13.98	
	9以上	(10) 花粉成熟期	80	137.2	126.8	92.42	13.5	9.84	

Key:

- | | |
|---|---|
| (1) Varieties | (13) Total number of grains |
| (2) Yun geng 21 | (14) Number of empty grains |
| (3) 6 ke lao | (15) Percentage of infertility percent |
| (4) Period of spraying chemicals | (16) Number of closed glumes |
| (5) Distance between leaf supports | (17) Percentage of closed glumes percent |
| (6) Over 11 | (18) Remark |
| (7) Pollen development period | (19) Partial wrapping of the neck occurred |
| (8) Period of meiosis of pollen mother cell | (20) Occurrence of about one-sixth of black husks |
| (9) Filling of pollen period | (21) Some black husks occurred |
| (10) Period of completion of maturation of pollen | (22) Same as above |
| (11) Surveyed number of panicles | |
| (12) Average per panicle | |

2. Concentration of the Chemical Solution

Experimental results show that emasculation using below 150 ppm of the No 1 emasculating agent is not thorough. When the concentration is greater than 250 ppm, the percentage of sterility can reach 100 percent. Yet the percentage of closed glumes is 30 to 60 percent and sometimes it has reached as high as 85 percent. At the same time, wrapped necks have occurred and part of the spikelets have changed to brown. The most suitable concentration is 150 ppm to 200 ppm. The emasculation is complete and the damage caused by the chemical is not serious. (see Table 2) Under an appropriate concentration, an even spraying is required and spraying should not miss some plants. Spraying must also not be overly done to achieve an ideal emasculation.

Table 2. Effect of Chemically Induced Male Sterility by Different Concentration

(1) 品种	(3) 浓度 ppm	(4) 叶长 cm	(5) 调查穗数	(6) 每穗					(12) 备注
				(7) 总粒数	(8) 不实粒数	(9) 不实率%	(10) 闭颖数	(11) 闭颖率%	
(2) 滇 甸 1 号	100	3—8	25	172.1	166.2	97.7	69.8	79.2	(13) 个别穗闭颖较重
	200	3—8	25	181.5	181.5	100	87.4	44.8	
	300	3—8	25	143.9	143.9	100	88.5	89.43	
77-136	100	1—8	25	180.2	180.1	99.72	69.6	27.1	
	200	1—8	25	189.2	189.2	100	69.7	34.89	
	300	1—8	25	182.5	182.5	100	79.2	48.05	
888	100	0—4	25	183.6	182.1	94.00	28.1	16.4	(14) 植株高度明显 比对照矮20公分
	200	0—4	25	230.2	230.2	100	36.4	15.80	
	300	0—4	25	180.4	180.4	100	88.9	29.87	

Key:

- | | |
|---|--|
| (1) Varieties | (10) Number of closed glumes |
| (2) Dianxie No 1 | (11) Percentage of closed glumes |
| (3) Concentration | (12) Remark |
| (4) Distance between leaf supports | (13) Individual panicles suffered more seriously from closed glumes. |
| (5) Surveyed number of panicles | (14) The planted plants and the control visibly showed a drop of 20 centimeters. |
| (6) Average per panicle | |
| (7) Total number of grains | |
| (8) Number of semi-filled grains | |
| (9) Percentage of infertility (percent) | |

3. Selective Combination of Strongly Superior Combinations for Chemical Emasculation

After screening over 70 combinations using chemically emasculated female parents, four combinations have been found to manifest the strongest heterosis. Manifestation of heterosis was very visible in the three aspects of effective panicles, weight of the full grains and weight of thousand grains which form the yield. Of the first generation seeds of 6 ke lao x jin ning 768, the 1.8 li small area yielded a net of 30 jin per thousand grains, equivalent to a per mu yield of 1,630 jin. The yield of the single plant showed an increase of 40.3 percent over the high value parent. The yield of the single plant of the 3 combinations of 77-136 x jin ning 768, yun geng 21 x jin ning 768, 888 x 77-136 showed increases of 37.28, 13.2 and 23.6 percent respectively over the high value parent. Of the four combinations, the plant height of 6 ke lao x jin 768 and 888 x 77-136 were medium and were considered to be ideal combinations.

4. Discussion of the Problem

According to preliminary practice in the use of chemicals to induce male sterility, the earlier the period of spraying the chemical the greater the inhibition upon the plants. When the chemical is sprayed too late, emasculation is not thorough. It seems that it is very important to choose the most appropriate time for emasculation. The concentration of the chemical and the effect of emasculation are closely related but the distance between the concentration for emasculation and the safe concentration is relatively narrow. In practice, an insufficient amount of chemicals will not emasculate thoroughly. An overly abundant amount will also cause abnormal flowering, thus in future practice, studies should be conducted in developing new emasculation chemicals. Selection of the parents should consider similar plant heights and growth periods of the parents. With combinations, consideration can be given to the utilization of the F_2 generation.

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BRIEFS

AGRICULTURAL HARVESTS--Kunming, 14 Dec (XINHUA)--Yunnan Province reaped good agricultural harvests in 1980. Although the area of grain and bean crops in the province in 1980 was 1.2 million mu smaller than in 1979, the 1980 grain and bean output topped those of 1979. The 1980 agricultural production showed 2.3 percent increase in grain, 48.7 percent increase in rapeseed, 11 percent increase in tea and 4.2 percent increase in sugarcane, compared with 1979. [Beijing Xinhua Domestic Service in Chinese 0216 GMT 20 Dec 80 OW]

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